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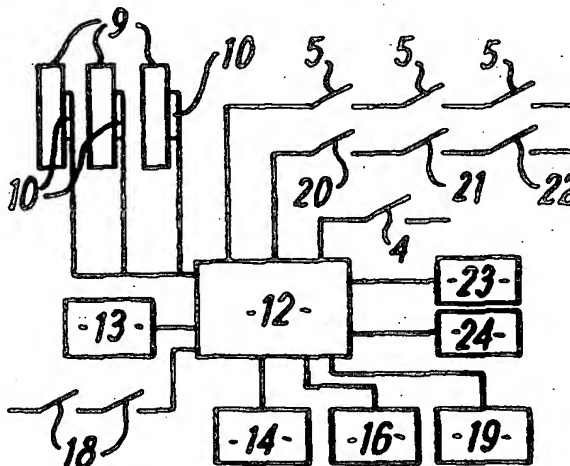
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(54) Title: ENTERTAINMENT MACHINES

(57) Abstract

A coin-operated entertainment machine of the "fruit" or "poker" kind is operated by a player to play a game which results in symbols being selected and displayed at a win zone (11). An award is made available if a win is attained. A control system (12) of the machine determines win attainment in accordance with one or more pre-set factors such as, the relative contribution of jackpot awards compared with "routine" awards, the relative contribution of different kinds of jackpot awards, and the relative contribution of "routine" awards compared with special feature awards. One or more user controls (20-22), such as multi-position switches within the machine are provided to adjust the pre-set factors. Adjustment may occur in relation to time periods monitored with a real-time clock (23).



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ENTERTAINMENT MACHINES

This invention relates to a coin-operated entertainment machine, particularly an amusement or gaming machine of the 'fruit' or 'poker' kind, which is operable by a player to play a game in which a combination of symbols is selected and displayed at a win zone. As used herein, the term
5 coin-operated is intended to cover operation by coins, tokens, bank notes, credit cards, cash cards, pre-paid cards or any other form of monetary value.

A known 'fruit' or 'poker' machine has a number of symbol-bearing
10 reels (or video simulations thereof) rotatable about a common horizontal axis behind a window. When stopped, each reel displays three or more symbols through the window centred on a horizontal win line. A win is awarded in the event that the combination of symbols on the win line is a predetermined winning combination.

15 It is also known for a win to be awarded if the symbol combination on one or more other lines of the displayed matrix of symbols is a predetermined winning combination. Wins can also be awarded in relation to any combination of symbols selected from the reels in any positions within the matrix.

20 It is possible to pre-select the combinations to be used for win assessment purposes, and the provision of a player control for this, and also to pre-select a stake multiplication factor, is described in copending

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application 9717053.4 to which reference is made for further information.

It is also known to provide additional game features which are made available on occasions to enable the player to influence the attainment or value of a win award, such as 'nudge', 'hold', 'gamble' and 'exchange' features.

It is further known to provide an additional feature game whereby play transfers on occasions from the reel display to a supplementary feature game display, for example comprising a 'track' along which play progresses in accordance with rotation of a player-operated feature reel. The supplementary game display, it will be appreciated, can be of any suitable type and may for example comprise one or more video bulbs. Wins can be awarded in dependence on the outcome of play of the feature game.

Awards may be of a routine moderate value in most cases, and additionally there may be one or more major accumulated awards, or jackpots which may correspond to attainment of a predetermined combination of jackpot symbols on the main display, or in response to a predetermined target outcome of the feature game, or otherwise.

It is common for there to be targets or limits imposed on payout awards and, in particular, there may be a maximum attainable award per game, and there may be a target overall return percentage of staked credit.

Control software is used and this is pre-set with the various factors which determine payout parameters as for example the odds of random (or

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pseudo random) symbol selection and the frequency with which the various features are made occasionally available. Compensation may be incorporated whereby an influence or demand is imposed on symbol selection or feature frequency to maintain payout percentage at all times as close as possible to a predetermined target or within a predetermined target range. Within the scope of this control the relative contributions of the different factors are pre-set whereby for example the proportion of overall payout attributed to jackpots rather than small awards is pre-set.

This known control arrangement has the problem that it cannot readily cope with different player requirements. At some sites, players may prefer to have a higher contribution to payout from jackpots, whereas at other sites players may prefer a higher proportion of smaller awards. This difference is often appreciated by site managers or operators and it is known to manufacture machines with control systems which are differently pre-set to accord with different site requirements. However this is inconvenient from a manufacturing point of view and also lacks flexibility.

An object of the present invention is to provide an improved control system which can more readily cope with different player requirements with regard to win awards.

According to the invention therefore there is provided a coin-operated entertainment machine which is operable by a player to play a game in which a combination of symbols is selected and displayed at a win zone and

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a win award is attained in the event that an outcome of the game is of a predetermined winning nature, win award attainment being determined in accordance with at least one factor pre-set with a control system of the machine, characterised by the provision of at least one user control
5 connected to the control system to adjust at least one said factor.

With this arrangement the (or each) factor, and hence win award attainment can be conveniently varied as and when required on an individual machine to suit requirements for that machine. A machine can therefore be readily adapted to meet player requirements with regard to the 'style' of
10 machine play at a particular site.

The (or each) adjustable factor may be of any suitable kind in accordance with requirements and depending on the nature of the machine and in particular depending on the nature and range of features on the machine. In one embodiment the machine has at least one kind of major or
15 jackpot award and also at least one smaller award, and the relative contribution of these to overall win award attainment constitutes one said adjustable factor.

The machine may have two kinds of major or jackpot awards, for example, pertaining to two different aspects of machine play, and the
20 relative contribution of these to overall win award attainment may constitute one said adjustable factor. In the case of a machine having win awards associated with a reel display and also with a game feature, reel play and

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feature play may constitute the two aspects of machine play.

The machine may have game features with win awards associated therewith and the average award value in relation to feature frequency may constitute one said adjustable factor.

5 In accordance with the invention, any other suitable factor contributing to win award attainment may be subject to adjustment. There may be multiple adjustable factors each with a respective user adjustment control.

10 The (or each) user adjustment control may provide continuous or stepwise control over a range.

 The (or each) control may be of the nature of a manually operable switch of any suitable form. This may be available for use by players, or only by authorised persons such as a site operator. The control may be accessible externally of the machine or internally within the machine.
15 Alternatively it may be accessible remotely from the machine via any suitable remote link.

 In accordance with the foregoing, the user control may comprise one or more multiposition switches operable to select factors such as:

- 20 i. the relative contribution of jackpot wins compared with 'routine' awards.
- ii. the relative contributions of different kinds of jackpots (e.g. a jackpot attained with reels and a jackpot attained with a separate feature

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game);

- iii. the relative contributions of 'routine' awards (e.g. from reel combinations) and special awards (e.g. from feature games).

The user control may be connected to the microprocessor-based control system of the machine and serve to adjust parameters of the operating software of the system.

In accordance with a further feature of the present invention it is also possible to adjust win award attainment factors by use of at least one said user control linked to a real-time clock of the control system of the machine.

In this way, adjustment of win award attainment can be effected in relation to specific time periods. For example, a desired win attainment parameter, such as an overall payout percentage, can be set in relation to the time of day and/or the day or date. Thus, the machine may be set to give an increased payout percentage, even say in excess of 100%, during an early evening quite period e.g. 6.00pm to 7.00pm on Monday evening. Different payout percentages may be set for different days e.g. lower payout percentages on Saturday night, higher during weekday afternoons.

In so far as the real-time clock influences overall operation of the control system of the machine, the use of a user control linked to the clock gives enhanced possibilities for adjustment of machine parameters. In particular provision can readily be made for adjustment of parameters such as:

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- i. tailoring of the machine's payout structure for the particular machine site;
- ii. adjusting the game speed;
- iii. adjusting jackpot percentage;
- 5 iv. adjusting base payout percentage.

It is customary practice to provide an interface whereby machine operational data can be downloaded from the machine for analysis and monitoring purposes. This download may be effected locally by connection of a handheld reader or the like to the interface by direct plug-in contact or
10 by radiation link, or it may be effected remotely via a suitable telephone or radiation or other remote link. As well as downloading data it is also possible to upload data through such an interface. This provision may be utilised for the user control of the present invention e.g. by providing keying facility (e.g. two keys) on the internal machine interface and/or on the local
15 or remote linked reader.

The machine of the invention is preferably a reel-type 'fruit' or 'poker' machine of the kind described above and having any one or more of the above mentioned features.

The invention will now be described further by way of example only
20 and with reference to the accompanying drawings in which:-

Fig. 1 is a diagrammatic representation of one form of a machine according to the invention; and

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Fig. 2 is a block circuit diagram of the machine.

Referring to the drawings, these show a fruit machine having a floor-standing box shaped housing 1 having a front wall which includes upper and lower glass panels 2, 3, a number of operating buttons 4, 5, a coin slot 7 and a payout opening 8.

Within the housing 1 there are three axially aligned reels 9 having say 20 symbols at regularly spaced positions around their peripheries. The reels 9 are axially rotatable and are drivably connected to respective stepper motors 10. The reels 9 are arranged behind a window 11 defined by a printed region of the lower glass panel 3. Each reel 9 can be arrested by the respective stepper motor 10 in any of 20 stopping positions in which one symbol is in precise registration with a horizontal win line in the centre of the window 11 and two further symbols are visible above and below the win line. The three reels therefore display a matrix of 3x3 symbols in three columns (i.e. the three reels) and three rows (across the three reels).

The stepper motors 10 are connected to a microprocessor-based control unit 12. This unit is also connected to a coin-mechanism 13, a payout mechanism 14, the buttons 4, 5, and controls 6 yet to be described.

In use, the player inserts coins into the coin mechanism 13 through the slot 7 sufficient to generate credit for one or more games, and the machine is actuated so that a game can now be played. The game commences after a start button 4 has been pressed and the reels 9 spin and

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then come to rest at random (or pseudo random) so as to select a combination of symbols displayed on the win line. The displayed symbol combination is assessed by the control unit 12 and a win indication is given in the event that the combination is of a predetermined winning nature.

5 The control buttons 5 can be used to perform 'hold' or 'nudge' functions, when made available to the player, so that the player can seek to influence the outcome of a game, in conventional manner.

10 The upper panel 2 is a transparent glass panel having a display region 15, which can be back-illuminated with a bank of lamps 16, and which provides a supplementary game feature. In conventional manner, play can transfer from the reels 9 to the display region 15 for example when a transfer symbol appears in the window 11.

15 There may also be a conventional gamble 'ladder' comprising a ladder display 17 with operating buttons 18 and back illumination lamps 19 whereby an attained award can be gambled, when this feature is available, by arresting moving illumination on the ladder with the buttons 18.

 Within the machine there are three multi-position manual selector switches 20, 21, 22 connected to the control unit 12. These switches are used to adjust parameters of operating software of the control unit.

20 In accordance with conventional practice the operating software maintains awards within predetermined limits. In particular the payout ratio, i.e. the proportion of stake credit returned in awards, is maintained as close

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as possible to a target level which may be say about 80%.

In order to attain this ratio, various parameters are set, such as the likelihood of selection of each symbol or combination, the likelihood or frequency of availability of the various supplementary features, such as hold, nudge, gamble, feature game.

Also, factors pertaining to these parameters are set to determine their relative contribution to win awards thereby to determine the style of play of the machine. By way of example, it is possible to achieve a desired payout ratio by having relatively frequent major jackpot wins and very few minor awards, or by having rare jackpot wins and frequent small awards.

Factors such as these can be set with the three switches 20, 21, 22.

In particular, switch 20 acts to set the contribution of jackpot wins; switch 21 acts to set the relative contributions of two different kinds of jackpots (one attained with the reels 9 and the other attained with the feature game); and switch 22 acts to set the relative contributions of the average award value and the frequency of availability of an award feature.

Example switch settings for the switches are as follows:

Setting	Switch 20	Switch 21	Switch 22
0	5% Jackpot	100% reel 0% feature	£2.00 1 in 16
1	10% Jackpot	90% reel 10% feature	£2.20 1 in 17.6
2	15% Jackpot	80% reel 20% feature	£2.40 1 in 19.2
3	20% Jackpot	70% reel 30% feature	£2.60 1 in 20.8

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	4	25% Jackpot	60% reel 40% feature	£2.80 1 in 22.4
	5	30% Jackpot	50% reel 50% feature	£3.00 1 in 24
	6	35% Jackpot	40% reel 60% feature	£3.20 1 in 25. 6
	7	40% Jackpot	30% reel 70% feature	£3.40 1 in 27.2
5	8	45% Jackpot	20% reel 80% feature	£3.60 1 in 28.8
	9	50% Jackpot	10% reel 90% feature	£3.80 1 in 30.4
	10	55% Jackpot	0% reel 100% feature	£4.00 1 in 32

With this arrangement by appropriate setting of the switches 20, 21, 22, the style of machine play can be conveniently adapted to player requirements without the need for an individual tailor-made operating program.

It is visualised that the adjustments will be made on site by (on in conjunction with) the site operator - to meet the particular requirements of players who frequent that site. Conveniently therefore the switches may be provided within the machine so as to be accessible when the machine is opened by an authorised person. The switches may be rotary switches or a keyboard or any other suitable arrangement.

Alternatively or additionally provision may be made for making changes from a remote location within the site, or away from the site at a central control location using a remote link such as a modem and telephone link or other arrangement.

In accordance with conventional practice, the control unit 12 is

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connected to a real-time clock 23 and also a data interface 24, internally of the machine. The data interface provides an output of monitored machine operational data which can be accessed externally of the machine by plugging in a hand-held reader or via a local or remote radiation or other link.

If desired, the switches 20-22 may be provided e.g. as keys on the interface 24 or even on the reader (not shown).

The operation of the switches 20-22 may be linked to the real-time clock 23 so that adjustments of the win attainment factors may take place with differing effect at differing times, as discussed above. There may be a further switch for adjusting or selecting the times, or this may be predetermined in the operating software of the control unit 12.

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only. In particular the invention is not restricted to adjustment of the three factors mentioned above; in practice other factors may also be adjusted. Furthermore, it will be appreciated that whilst stepper motor driven reels are described in the above embodiment, it is possible for reels, and the driving motors therefore to be replaced by a video display which is operable to provide a display which simulates the effect of moving reels upon actuation of a user control button, e.g. start button 4.

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CLAIMS

1. A coin-operated entertainment machine which is operable by a player to play a game in which a combination of symbols is selected and displayed at a win zone and a win award is attained in the event that an outcome of the game is of a predetermined winning nature, win award attainment being determined in accordance with at least one factor pre-set with a control system of the machine, characterised by the provision of at least one user control connected to the control system to adjust at least one said factor.
2. A machine according to claim 1 wherein the machine has at least one kind of major or jackpot award and also at least one smaller award, and the relative contribution of these to overall win award attainment constitutes one said adjustable factor.
3. A machine according to claim 1 or 2 wherein the machine has two kinds of major or jackpot awards, pertaining to two different aspects of machine play, and the relative contribution of these to overall win award attainment constitutes one said adjustable factor.
4. A machine according to claim 3 wherein the machine has win awards associated with a reel display and also with a game feature, and said reel play and feature play constitute the said two aspects of machine play.
5. A machine accordingly to any one of claims 1 to 4 wherein the

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machine has game features with win awards associated therewith and the average award value in relation to feature frequency constitutes one said adjustable factor.

- 5 6. A machine according to any one of claims 1 to 5 wherein at least one said user control is linked to a real time clock of the said control system of the machine whereby adjustment of win award attainment is arranged to be effected in relation to time periods.
- 10 7. A machine according to any one of claims 1 to 6 wherein there are multiple said adjustable factors each with a respective said user adjustment control.
8. A machine according to any one of claims 1 to 7 wherein the (or each) said user adjustment control is a manually operable multi-position switch.
- 15 9. A machine according to any one of claims 1 to 8 wherein the (or each) said user adjustment control is accessible internally of the machine.
10. A machine according to any one of claims 1 to 8 wherein the (or each) said user adjustment control is accessible remotely from the machine via a remote link.
- 20 11. A machine according to any one of claims 1 to 10 wherein the machine has a data interface for connection to an external data reader and the (or each) said user adjustment control is provided on

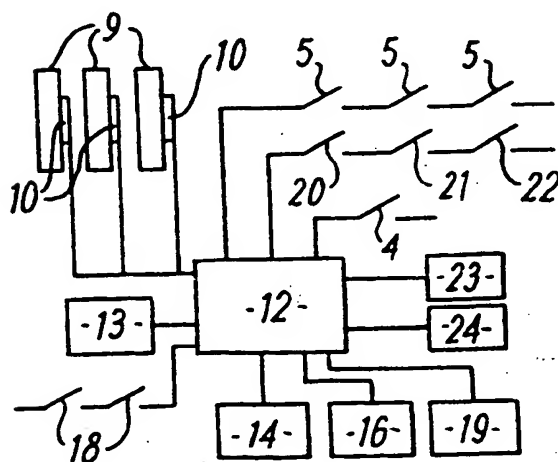
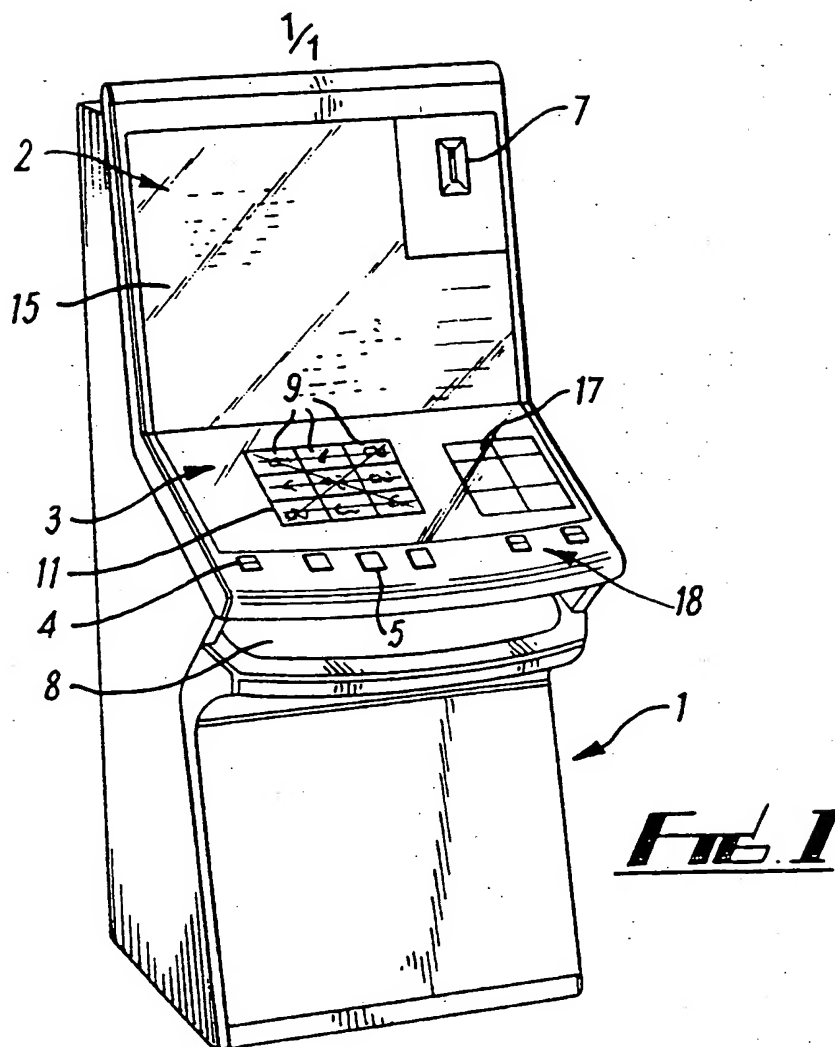
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the interface and/or the reader.

12. A machine according to any one of claims 1 to 11 which is a reel-type 'fruit' or 'poker' machine.

13. A coin-operated machine substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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INTERNATIONAL SEARCH REPORT

Int. .ional Application No

PCT/GB 98/03352

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 G07F17/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 44 26 582 A (NSM AG) 1 February 1996	1-4,6,7, 12
Y	see column 3, line 18 - column 4, line 28; figure	10
A		5,8
Y	GB 2 201 279 A (BELL-FRUIT MANUFACTURING) 24 August 1988 see page 5, line 4 - line 20; figure 1	10
X	GB 2 098 778 A (QUESTENCO) 24 November 1982	1-4,7,12
Y	see page 1, line 84 - page 2, line 20; figure	5
A		8
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

16 March 1999

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22/03/1999

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/03352

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 4 864 499 A (CASEY) 5 September 1989 see column 1, line 31 - line 38 see column 2, line 59 - column 3, line 11; figure 2 ---	1-3,12 5 7-9
X A	US 5 380 008 A (MATHIS ET AL.) 10 January 1995 see column 16, line 5 - line 51; figures ---	1,2,8,9, 12 3,4,7
X A	WO 96 22586 A (ARISTOCRAT LEISURE INDUSTRIES) 25 July 1996 see page 2, last paragraph - page 3, line 1; figure 4 -----	1,2,12 3,4,7,8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/03352

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